

## OVERVIEW

The H12386 series is a photon counting head device consisting of a metal package photomultiplier tube, along with a high-speed photon counting circuit and a high-voltage power supply circuit. The high voltage supply for photomultiplier tube and the discrimination level are preset to optimum values, allowing photon counting measurement by just connecting a +5 V supply.

The H12386 series has also over light detection function to output a signal at the state that an output count falls by excessive incident light. By this signal, measurement data can be judged that it is normal or not.



## PRODUCT VARIATIONS

Type No.	Spectral response	Photocathode	Features
H12386-110	230 nm to 700 nm	Super bialkali	For visible range
H12386-210	230 nm to 700 nm	Ultra bialkali	For visible range, high sensitive than super bialkali
H12386-01	230 nm to 870 nm	Multialkali	For visible to near IR range

This product can't be used at vacuum environment or reduced pressure environment.

## SPECIFICATIONS

(at +25 °C)

Parameter			H12386-110	H12386-210	H12386-01	Unit
Input voltage			+4.75 to +5.25			V
Max. input voltage			+6			V
Max. input current			40			mA
Effective area			φ8			mm
Peak sensitivity wavelength			400			nm
Count sensitivity	300 nm	Typ.	$3.7 \times 10^5$	$3.9 \times 10^5$	$2.7 \times 10^5$	s <sup>-1</sup> .pW <sup>-1</sup>
	400 nm	Typ.	$4.9 \times 10^5$	$6.1 \times 10^5$	$3.6 \times 10^5$	
	500 nm	Typ.	$3.7 \times 10^5$	$4.6 \times 10^5$	$2.8 \times 10^5$	
	600 nm	Typ.	$1.1 \times 10^5$	$1.3 \times 10^5$	$2.0 \times 10^5$	
	700 nm	Typ.	$7.7 \times 10^3$	$9.1 \times 10^3$	$1.2 \times 10^5$	
	800 nm	Typ.	—	—	$3.0 \times 10^4$	
Count linearity *1			5.0 × 10 <sup>6</sup>			s <sup>-1</sup>
Dark count *2		Typ.	50	50	600	s <sup>-1</sup>
		Max.	100	100	1000	
Pulse-pair resolution			20			ns
Output pulse width			10			ns
Output pulse height	Load resistance 50 Ω	Min.	+2			V
		Typ.	+2.2			
	Un-terminated	Min.	+4			
		Typ.	+4.4			
Recommended load resistance			50			Ω
Signal output logic			Positive logic			—
Over light detection output *3	High level	Min.	+3.5			V
	Low level	Max.	+0.5			
Operating ambient temperature *4			+5 to +40			°C
Storage temperature *4			-20 to +50			°C
Weight			61			g

\*1: Random pulse, at 10 % count loss

\*2: After 30 minutes storage in darkness

\*3: Load resistance 10 kΩ

\*4: No condensation

# PHOTON COUNTING HEADS H12386 SERIES

Figure 1: Count sensitivity

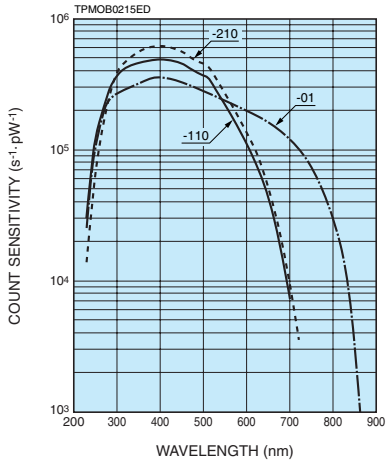


Figure 2: Dark count

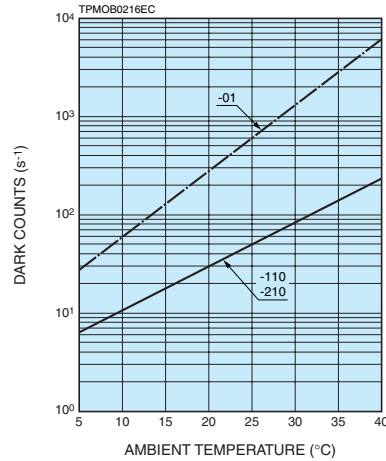


Figure 3: Output waveform

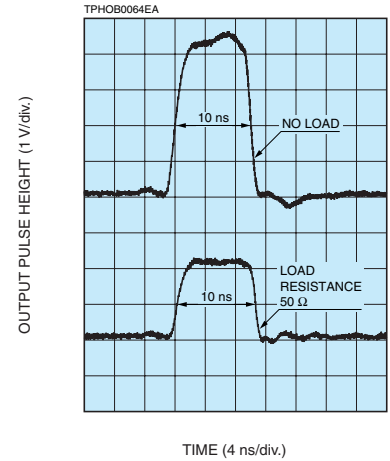


Figure 4: Count rate linearity and over light detection output

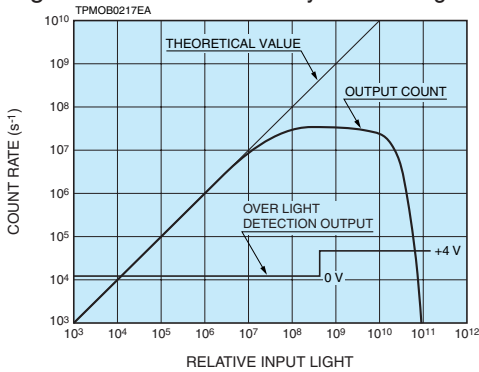


Figure 5: Count rate linearity correction

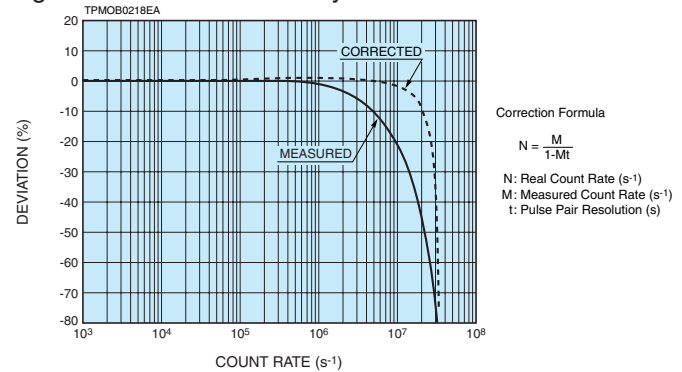


Figure 6: Block diagram

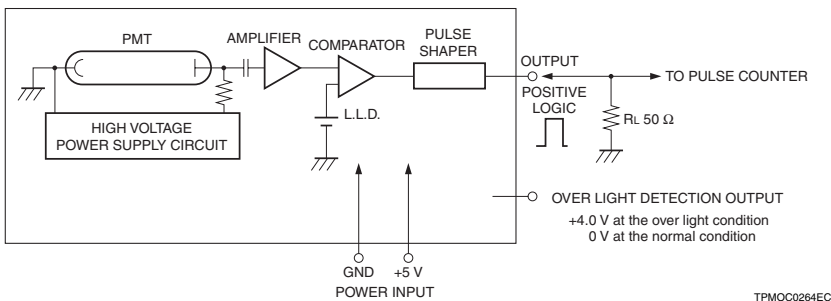
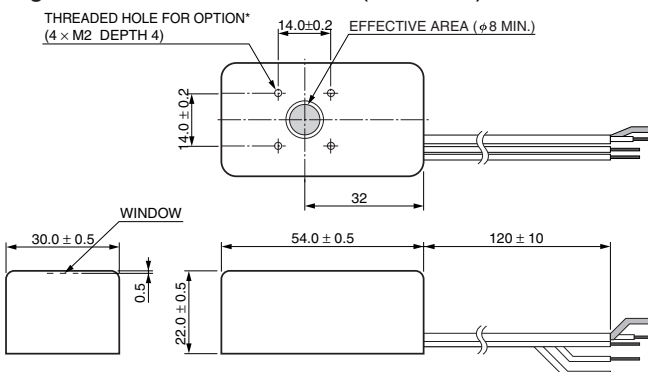


Figure 7: Dimensional outline (Unit: mm)



\* OPTION: E5776, E5776-51, A9865, A10030-01  
 \*\* OPTION: Available with BNC/SMA connector.

LOW VOLTAGE INPUT (+5 V) : AWG26 (RED)  
 GND : AWG26 (BLACK)  
 OVER LIGHT DETECTION OUTPUT: AWG26 (BLUE)  
 SIGNAL OUTPUT : RG-178B/U\*\*

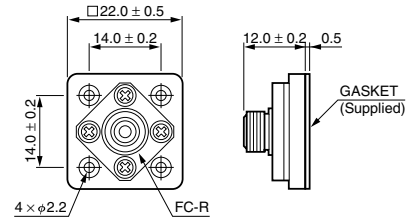
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## OPTIONS

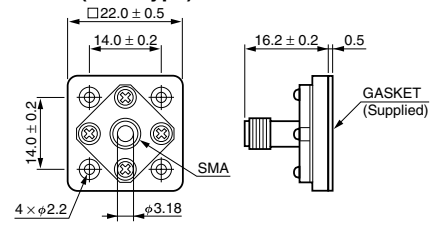
### OPTICAL FIBER ADAPTER (Unit: mm)

#### E5776 (FC Type)



\* Supplied with M2 screws(4 pcs) for fixing to module

#### E5776-51 (SMA Type)



\* Supplied with M2 screws(4 pcs) for fixing to module

Note: Optical blocks are available for these photon counting heads to make compact optical systems without light leakage.

## HAMAMATSU PHOTONICS K.K. [www.hamamatsu.com](http://www.hamamatsu.com)

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